

Blockchain:

**exploring what it is, growing
applications; relationship to Web 3**

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Note of thanks

- To Dr. Donald Hsu, for resuming the e-Leader Conferences fostering progress through knowledge worldwide
- To Dr. Sam Owarish, my brother, for being a constant encouragement to me

Introduction

What is blockchain technology

A blockchain is a type of distributed database or ledger—one of today's top tech trends—which means the power to update a blockchain is distributed between the nodes, or participants, of a public or private computer network. This is known as distributed ledger technology, or DLT.

The Properties of Distributed Ledger Technology (DLT)

Programmable

A blockchain is programmable (i.e. Smart Contracts)

Secure

All records are individually encrypted

Anonymous

The identity of participants is either anonymous or pseudonymous



Distributed

All network participants have a copy of the ledger for complete transparency

Immutable

Any validated records are irreversible and cannot be changed

Time-stamped

A transaction timestamp is recorded on a block

Unanimous

All network participants agree to the validity of each of the records

Pervasive nature

- There is already a sizable number of blockchain applications.
- As a database technology, it is useful to many industries.
- Many organizations, public and private, are hopping on the blockchain 'train'.

IBM, a major player:

- as a business adapts to an ever-changing new normal, extending collaboration and optimization beyond its boundaries, blockchain is an instrument that can foster next-level growth. Transformation is not always easy, and technology should not stand in the way. The basic purpose of blockchain is to drive operational agility and open new revenue streams through trusted data exchange and workflow automation beyond the boundaries of the business

[https://www.ibm.com/topics/ blockchain](https://www.ibm.com/topics/blockchain)

- Blockchain fundamentals
- How blockchain works
- Blockchain in action: use cases
- Hyperledger, hosted by the Linux Foundation
- Ten steps to your first blockchain application

The big four

- The professional services industry has taken a special interest in the cryptocurrency technology as many companies are in the process of adopting blockchain technology into their operations. The Big Four accounting firms, Deloitte, Ernst & Young, PricewaterhouseCoopers, and KPMG are no different. In fact, owing to their huge client base and influential position in the industry segment, the companies have gained the recognition of being the most active members of the blockchain revolution

More on the fundamentals and applications

- [Here's what the blockchain does and what it means to you.](#)
- [Train to Become A Blockchain Developer](#)
- [How it works](#)
- [17 Uses of Blockchain Applications That Are Transforming Society](#)
- [Blockchain Business](#)
- [Smart Property](#)
- [Where the blockchain comes in](#)
- [Smart Contracts](#)
- [Blockchain Identity](#)
- [Blockchain Applications: Conclusion](#)

Microsoft

- Web3 – Developer Solutions | Microsoft Azure

Uses of blockchain transforming society

- Asset Management: Trade Processing and Settlement; Insurance: Claims processing;
- Payments: Cross-Border Payments; Unconventional money lenders/ hard money lending; Your car/ smartphone; Blockchain Internet-of-Things (IoT); Smart Appliances;
- Supply Chain Sensors; Blockchain Healthcare; Blockchain music; Blockchain Government; Public value/ community; Vested responsibility; Blockchain Identity; Passports; Birth, wedding, and death certificates; Personal Identification

Major world conference addressing blockchain

- FinTech Conference – FinTech Conference in London is FinTech World Forum 2023 based in London UK Europe as one of leading FinTech events 2023 for global financial, payments, lending, blockchain and banking technology industry.
(fintechconferences.com)

Revolution in progress

A fascinating tech world is unfolding with potential to make a major difference as it gathers momentum.

Blockchain in the banking sector facing difficulties

- <https://corpgov.law.harvard.edu/2022/01/28/blockchain-in-the-banking-sector-a-review-of-the-landscape-and-opportunities/>

Blockchain development

- Blockchain Development - Mobile Programming LLC

Blockchain alternative

- #1 IBM Blockchain Alternative - Built for the Enterprise (kaleido.io)

Learning about blockchain



3 in 1 book

- The three in one guide to blockchain technology. Book 1: The more sophisticated specifics of blockchain programming will be discussed in this book. Expand your knowledge about this popular way of using software and Ethereum to achieve monetary and accuracy purposes. Book 2: You've learned the specifics of blockchain technology. Now it's time for you to apply these things in real life. Book 3: A different angle to the elaborate uses of blockchain technology.

Berkeley's Blockchain and Cryptocurrencies Online Program (emeritus.org)

In this program, you will:

- Gain a comprehensive understanding of blockchain, cryptocurrencies, decentralized finance (DeFi), non-fungible tokens (NFTs), and decentralized autonomous organizations (DAOs).
- Explore current developments, emerging trends, and regulatory issues regarding blockchain technology and the crypto market.
- Apply frameworks and strategic applications of blockchain technology to identify innovation opportunities in businesses, governments, nonprofits, or new ventures.
- Build strategies that leverage blockchain and cryptocurrencies to address a challenge faced by your organization or industry.

MIT <https://mit-online.getsmarter.com/presentations/lp/mit-blockchain-technologies-online-short-course/>

- **ON COMPLETION OF THIS PROGRAM, YOU'LL WALK AWAY WITH:**
- **1** A deeper understanding of the **capabilities and limitations of blockchain technology**, enabling you to assess which business problems it can solve.
- **2** A framework for a **blockchain-based strategy** that addresses a challenge within your own business context.
- **3** Knowledge of **how blockchain powers applications like bitcoin and other token-based initiatives**, guided by cryptoeconomics expert Christian Catalini.

Columbia University blockchain in business

- https://online1.gsb.columbia.edu/blockchain-in-business?utm_source=Google&utm_network=g&utm_medium=c&utm_term=blockchain%20program&utm_location=9004331&utm_campaign_id=17376322200&utm_adset_id=136881068546&utm_ad_id=601256118918&gclid=Cj0KCQjwt_qgBhDFARIsABcDjOfJuxRydKWYmPrZ0Kk_9ZplwsE1p_toos-jgBSu_bSfjMfzvdCJqRq8aAjo6EALw_wcB

Conclusion 1

- The technological world does not stop progressing. I remember my conversation with Alvin Toffler at UNITAR and his prediction in term of waves. The internet has kept on expanding, I also remember my conversation with other university professors at the IN3 in Barcelona; some were predicting that as the internet expands it would reach a point where it would crash, whereas I was among those saying that it will keep on growing along with the web; we moved onto the Internet of Things (IoT). Today we are talking of Web 3 in relationship to blockchain. This research paper will also help us to understand the new technological environment and learn to grow with it, Berkeley, MIT and Columbia are giving us a helping hand.

Conclusion 2

- It is worth having a look at the broader context, both theoretical and practical, leading us to the world of quantum physics, for instance Computers and Smartphone: **The entire working process of computers is based on quantum physics.** The phenomenon of band structure, which supports the modern semiconductor-based electronics, is fundamentally a quantum mechanism. Lasers and Telecommunication: The base of fiber optic telecommunication is quantum physics.

Conclusion 3a What does quantum computing mean for blockchain

- <https://www.weforum.org/agenda/2022/04/could-quantum-computers-steal-the-bitcoins-straight-out-of-your-wallet/>

Conclusion 3b Further look

- Quantum computing could upend existing assumptions about the security of the blockchain.
- In the wrong hands, sophisticated attackers could seize cryptos directly from a wallet, or even as they are traded from one wallet to another.
- While the technology is not yet ready for this, we must prepare now to mitigate the threats of the future.
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